



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/673,683

09/29/2003

Takehiro Nakamura

15689.49.1

4169

7590

08/04/2009

ADRIAN J. LEE  
WORKMAN, NYDEGGER & SEELEY  
1000 Eagle Gate Tower  
60 East South Temple  
Salt Lake City, UT 84111

EXAMINER

KIM, KEVIN

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

08/04/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/673,683	<b>Applicant(s)</b> NAKAMURA ET AL.	
	<b>Examiner</b> Kevin Y. Kim	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 5-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/19/08</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed May 20, 2009 have been fully considered but they are not persuasive.

Applicant argues that examiner relied on the impermissible hindsight for finding the claimed invention obvious. Applicant based this assertion on the lack of documentation describing the claimed invention in a manner as proposed by examiner in the previous Office action. However, no such written prior reference is required to establish the obviousness of a claimed invention under 35 USC 103. The question of obviousness turns on whether one skilled in the art would have arrived at the claimed invention when given two or more prior references at the time the invention was made. In other words, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

It is agreed that the Hassan patent does not explicitly teaches the ratio of pilot symbols in a slot to total symbols in the slot is smaller in a higher rate than in a lower rate. However, it teaches using an appropriate number of pilot symbols at a given rate. More specifically, the patent teaches a trade-off between the accuracy of channel estimation and the increased overhead when a large number of pilot symbols are used.

Art Unit: 2611

Thus, one skilled in the art, aware of the importance of selecting an appropriate number of pilot symbols as taught by the Hassan patent, would have been interested in finding the number of symbols in each transmission rate when constructing the invention disclosed in the Marchetto et al patent, with the result being that the ratio of pilot symbols in a slot to total symbols in the slot is smaller in a higher rate than in a lower rate.

With different transmission rates, one skill in the art has only a finite number of selecting pilot symbols. For a higher transmission rate, the use of the same, more or less pilot symbols is possible compared to a lower transmission rate. Out of these finite number of solutions, one that meets the design criteria of the skilled person, such as the claimed invention, would have been selected.

***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marchetto et al (US 5,914,959) in view of Hassan (US 5,901,185).

Marchetto et al discloses a communication system and method, comprising a transmission apparatus (base station) for transmitting a signal at plural types of transmission rates (highest bit rate and lower bit rate, see Abstract), and a reception apparatus (mobile paging unit) for receiving the transmitted signal, wherein:

the transmission apparatus would comprise:

Art Unit: 2611

signal generation means for generating a signal (Information Symbols) to be transmitted into which pilot symbols (Periodic Pilot Symbol Block) which are predetermined patterns have been inserted (see Fig.1A),

transmission means (see Fig.3) for transmitting the generated signal, and

the reception apparatus comprises:

reception means for receiving the transmitted signal; and

coherent detection means for carrying out coherent detection by using the pilot symbols included in the received signal. Though not described, a coherent detection means is required at a receiver side that uses the pilot symbols.

Marchetto et al teaches different transmission rates, the patent fails teach that a ratio of a number of the pilot symbols to a total number of symbols in a single slot of the signal becomes smaller when the rate is high than the rate is low. Hassan teaches that an appropriate (in other words, optimal) number of pilot symbols should be used for reducing the bit error rate and, at the same time, the overhead. See col. 4:48-64. Since it is desirable to minimize the number of pilot in order to reduce overhead, when a same number of pilot symbols is used for high and low transmission rates, the ratio of the optimized number of pilot symbols to the total number of symbols would have been smaller when the transmission rate is higher than it is when the transmission rate is lower. Thus, it would have been obvious to one skilled in the art at the time the invention was made to select an appropriate number of pilot symbols for each of the transmission rates in the communication system of Marchetto et al, as suggested by Hassan, whereby the ratio of the number of the pilot symbols to the total number of symbols in a single

Art Unit: 2611

slot of the signal becomes smaller when the transmission rate is high than it is when the transmission rate is low.

***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Y. Kim whose telephone number is 571-272-3039. The examiner can normally be reached on 8AM --5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin Y Kim/

Primary Examiner, Art Unit 2611